

Amendment and Response  
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### REMARKS

Claims 1-24 were presented for examination. The Office Action dated September 22, 2004 rejects claims 1, 6-17, and 19-21 and objects to claims 2-5, 18, and 22-24 as being dependent upon a rejected base claim. According to the Office Action, claims 2-5, 18, and 22-24 would be allowable if rewritten in independent form.

This paper cancels claims 2, 18, and 22, amends claims 1, 3-5, 15, 20, 23, and 24, and adds new claims 25-38. Support for the newly added claims, in general, can be found throughout the specification and, in particular, in paragraph 24 on page 11 and in figures 1 and 2. Claims 1, 3-17, 19-21, and 23-38 are now pending in the application.

#### **Rejection of Claims 1, 6-17, and 19-21 and Objection to Claims 2-5, 18, and 22-24**

The Office Action rejects claims 1, 6-7, 10, 12-17, and 20-21 under 35 U.S.C. 102(b) as anticipated by Smith (U.S. Patent No. 5,578,906) and claims 8-9, 11, and 19 under 35 U.S.C. 103(a) as being unpatentable over Smith. The Office Action also objects to claims 2-5, 18, and 22-24 as being dependent upon a rejected base claim, but indicates such claims would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

Applicants have amended independent claims 1, 15, and 20 to include the limitations of dependent claims 2, 18, and 22, respectively. Therefore, claims 1, 15, and 20 each corresponds to an objected-to dependent claim rewritten in independent form and is, therefore, now allowable. Amendments to claims 3-5 reestablish claim dependencies severed due to the cancellation of claim 2. Amendments to claims 23 and 24 more clearly integrate these claims

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with the currently amended independent claim 20, from which they depend. In view of these amendments, Applicants respectfully submit that this rejection is overcome.

**Newly added Claims 25-38**

With respect to the newly added claims, the Applicants' invention, as set forth in representative independent claim 25, relates to a system having a charge-emission device with an emitter and a gate electrode. A controllable current source is electrically connected to the emitter of the charge-emission device and supplies a controlled amount of electrical current to the emitter. The supplied amount of electrical current produces a voltage difference between the emitter and the gate electrode of a magnitude sufficient to cause the emitter to emit electrical charge. *This emission of electrical charge occurs without having to use a voltage supply to apply a voltage bias to the gate electrode in order to achieve the voltage difference.*

Smith discloses a field emission device with an emitter and a gate electrode and a transient current source connected to the emitter. Smith also discloses an external voltage source (104) that is connected to the gate electrode. This voltage source induces an electric field "at a surface of the electron emitter and gives rise to electron emission from the electron emitter." (Col. 3, lines 41-44). Because modulation of the voltage applied to the gate electrode is not considered an effective method for controlling electron emission, Smith uses the transient current source to control the rate of electron emission (col. 4, lines 27-33).

Unlike the Applicants' invention, however, Smith does not disclose or suggest causing electron emission *without the use of the voltage supply (104) to apply a voltage bias to the*

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*gate electrode*. While it may be true that Smith's transient current source can contribute to the voltage difference produced by the voltage supply, nowhere does Smith disclose or teach that the transient current source can produce a sufficient voltage difference to cause electron emission without the voltage supply applying a bias to the gate electrode. Thus, in comparison to Smith, the Applicants' invention omits the external voltage supply between the gate electrode and emitter, while retaining this element's function (i.e., producing a voltage difference across the gate electrode and emitter of sufficient magnitude to induce the emitter to emit charge). Omission of an element with retention of the element's function is an indicia of unobviousness (MPEP § 2144.04(II)(B)). Therefore, Applicants respectfully submit that the newly claims 25-38 are patentable over Smith.

### CONCLUSION

In view of the amendments and arguments made herein, Applicant submits that the application is in condition for allowance and requests early favorable action by the Examiner.


If the Examiner believes that a telephone conversation with the Applicant's representative would expedite allowance of this application, the Examiner is cordially invited to call the undersigned at (508) 303-2003.

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Respectfully submitted,

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